Hydrometeorology and Polarimetric Radar : How can polarimetric radar aid the forecast of Flash Flooding?

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Accurate measurements of distributed rainfall are critical in providing accurate and timely forecasts of flood conditions. Rain gauges provide point measurements that are then extrapolated to the entire region. Though traditional, this technique does not measure the high variability within the rainfall distribution, resulting in significant errors. Weather radar, on the other hand, has promised high resolution measures of the rainfield and all of its variability. Until recently, this promise has only been fulfilled qualitatively, i.e. the variations in the rainfall distribution are identified. Quantitatively, radar has not lived up to the hype. The new polarimetric radars characterize the liquid water content within a range cell much better than single polarization radars. This results in much better rainfall estimates when compared to the associated rain gauges.

A new C-band polarimetric radar is located in Enterprise, Alabama. The region scanned by the radar includes an area monitored by the Choctawhatchee, Pea, and Yellow Rivers Watershed Management Authority, a state agency formed after the devastating floods of 1990. This paper discusses the implementation of the polarimetric radar in monitoring of the watershed.